



LAYER 2

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TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.15	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.00	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	0.00	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4	- POOR

LAYER 3

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TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 0

THICKNESS	=	0.30	CM
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0450	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC

LAYER 4

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TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 20

THICKNESS	=	0.50	CM
POROSITY	=	0.8500	VOL/VOL
FIELD CAPACITY	=	0.0100	VOL/VOL
WILTING POINT	=	0.0050	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	10.0000000000	CM/SEC
SLOPE	=	5.95	PERCENT
DRAINAGE LENGTH	=	52.0	METERS

LAYER 5

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TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.15	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC

FML PINHOLE DENSITY	=	0.00	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	0.00	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4 - POOR	

LAYER 6

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TYPE 3 - BARRIER SOIL LINER  
MATERIAL TEXTURE NUMBER 17

THICKNESS	=	0.50	CM
POROSITY	=	0.7500	VOL/VOL
FIELD CAPACITY	=	0.7470	VOL/VOL
WILTING POINT	=	0.4000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.7500	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.300000003000E-08	CM/SEC

LAYER 7

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TYPE 1 - VERTICAL PERCOLATION LAYER  
MATERIAL TEXTURE NUMBER 0

THICKNESS	=	15.00	CM
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0449	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

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NOTE: SCS RUNOFF CURVE NUMBER WAS USER-SPECIFIED.

SCS RUNOFF CURVE NUMBER	=	0.00	
FRACTION OF AREA ALLOWING RUNOFF	=	0.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.0000	HECTARES
EVAPORATIVE ZONE DEPTH	=	20.0	CM
INITIAL WATER IN EVAPORATIVE ZONE	=	2.188	CM
UPPER LIMIT OF EVAPORATIVE STORAGE	=	8.340	CM
LOWER LIMIT OF EVAPORATIVE STORAGE	=	0.360	CM
INITIAL SNOW WATER	=	7.842	CM
INITIAL WATER IN LAYER MATERIALS	=	6.174	CM
TOTAL INITIAL WATER	=	14.016	CM
TOTAL SUBSURFACE INFLOW	=	0.00	MM/YR

EVAPOTRANSPIRATION AND WEATHER DATA

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NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM  
ST-CHARLES-GARNIER QUEBEC

STATION LATITUDE = 48.33 DEGREES  
 MAXIMUM LEAF AREA INDEX = 0.00  
 START OF GROWING SEASON (JULIAN DATE) = 144  
 END OF GROWING SEASON (JULIAN DATE) = 260  
 EVAPORATIVE ZONE DEPTH = 20.0 CM  
 AVERAGE ANNUAL WIND SPEED = 13.70 KPH  
 AVERAGE 1ST QUARTER RELATIVE HUMIDITY = 70.00 %  
 AVERAGE 2ND QUARTER RELATIVE HUMIDITY = 69.00 %  
 AVERAGE 3RD QUARTER RELATIVE HUMIDITY = 76.00 %  
 AVERAGE 4TH QUARTER RELATIVE HUMIDITY = 78.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING  
COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY PRECIPITATION (MM)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
67.5	62.0	77.5	74.0	90.5	90.5
104.5	102.3	98.5	98.5	86.0	87.0

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING  
COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES CELSIUS)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-14.2	-12.2	-6.0	1.1	8.7	14.5
17.5	16.1	10.5	4.4	-2.5	-10.6

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING  
COEFFICIENTS FOR CARIBOU MAINE  
AND STATION LATITUDE = 48.33 DEGREES

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AVERAGE MONTHLY VALUES (MM) FOR YEARS 1 THROUGH 25

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	75.14	75.05	70.32	53.24	83.53	87.05
	106.67	93.01	96.04	97.61	84.77	81.64



AVERAGES OF MONTHLY AVERAGED DAILY HEADS (CM)

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 DAILY AVERAGE HEAD ON TOP OF LAYER 2  
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AVERAGES	0.6824	0.1381	1.2528	23.6807	27.9483	11.2097
	7.0586	6.5538	8.1045	8.2723	9.7044	3.3351
STD. DEVIATIONS	0.4063	0.0825	2.2641	12.2287	7.6542	4.1279
	4.0288	4.5838	5.2664	4.5950	5.8074	1.9364

-----  
 DAILY AVERAGE HEAD ON TOP OF LAYER 5  
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AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 25

	MM		CU. METERS	PERCENT
	-----		-----	-----
PRECIPITATION	1004.06	( 106.025)	10040.6	100.00
RUNOFF	0.000	( 0.0000)	0.00	0.000
EVAPOTRANSPIRATION	355.246	( 87.1066)	3552.46	35.381
LATERAL DRAINAGE COLLECTED FROM LAYER 1	648.77863	(178.89795)	6487.786	64.61526
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.00380	( 0.00104)	0.038	0.00038
AVERAGE HEAD ON TOP OF LAYER 2	89.951	( 24.908)		
LATERAL DRAINAGE COLLECTED FROM LAYER 4	0.00379	( 0.00083)	0.038	0.00038
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.00001	( 0.00000)	0.000	0.00000
AVERAGE HEAD ON TOP OF LAYER 5	0.000	( 0.000)		
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.01065	( 0.00125)	0.107	0.00106
CHANGE IN WATER STORAGE	0.025	( 2.6876)	0.25	0.003

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PEAK DAILY VALUES FOR YEARS	1 THROUGH	25
	(MM)	(CU. METERS)
PRECIPITATION	63.40	634.000
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 1	11.82067	118.20665
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.000069	0.00069
AVERAGE HEAD ON TOP OF LAYER 2	599.995	
MAXIMUM HEAD ON TOP OF LAYER 2	815.827	
LOCATION OF MAXIMUM HEAD IN LAYER 1 (DISTANCE FROM DRAIN)	16.5 METERS	
DRAINAGE COLLECTED FROM LAYER 4	0.00004	0.00040
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.000000	0.00000
AVERAGE HEAD ON TOP OF LAYER 5	0.000	
MAXIMUM HEAD ON TOP OF LAYER 5	0.445	
LOCATION OF MAXIMUM HEAD IN LAYER 4 (DISTANCE FROM DRAIN)	0.0 METERS	
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.000037	0.00037
SNOW WATER	468.39	4683.8555
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.4170
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.0180

\*\*\* Maximum heads are computed using McEnroe's equations. \*\*\*

Reference: Maximum Saturated Depth over Landfill Liner  
by Bruce M. McEnroe, University of Kansas  
ASCE Journal of Environmental Engineering  
Vol. 119, No. 2, March 1993, pp. 262-270.

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FINAL WATER STORAGE AT END OF YEAR 25

LAYER	(CM)	(VOL/VOL)
1	6.7649	0.1127
2	0.0000	0.0000
3	0.0135	0.0450
4	0.0050	0.0100
5	0.0000	0.0000
6	0.3750	0.7500
7	0.6471	0.0431
SNOW WATER	6.274	

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TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 18

THICKNESS = 300.00 CM  
 POROSITY = 0.6710 VOL/VOL  
 FIELD CAPACITY = 0.2920 VOL/VOL  
 WILTING POINT = 0.0770 VOL/VOL  
 INITIAL SOIL WATER CONTENT = 0.2920 VOL/VOL  
 EFFECTIVE SAT. HYD. COND. = 0.100000005000E-02 CM/SEC

LAYER 3

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TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 1

THICKNESS = 60.00 CM  
 POROSITY = 0.4170 VOL/VOL  
 FIELD CAPACITY = 0.0450 VOL/VOL  
 WILTING POINT = 0.0180 VOL/VOL  
 INITIAL SOIL WATER CONTENT = 0.1687 VOL/VOL  
 EFFECTIVE SAT. HYD. COND. = 0.999999978000E-02 CM/SEC  
 SLOPE = 5.96 PERCENT  
 DRAINAGE LENGTH = 52.0 METERS

LAYER 4

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TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS = 0.15 CM  
 POROSITY = 0.0000 VOL/VOL  
 FIELD CAPACITY = 0.0000 VOL/VOL  
 WILTING POINT = 0.0000 VOL/VOL  
 INITIAL SOIL WATER CONTENT = 0.0000 VOL/VOL  
 EFFECTIVE SAT. HYD. COND. = 0.199999996000E-12 CM/SEC  
 FML PINHOLE DENSITY = 0.00 HOLES/HECTARE  
 FML INSTALLATION DEFECTS = 0.00 HOLES/HECTARE  
 FML PLACEMENT QUALITY = 1 - PERFECT

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

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NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT  
 SOIL DATA BASE USING SOIL TEXTURE # 6 WITH BARE  
 GROUND CONDITIONS, A SURFACE SLOPE OF 2.% AND  
 A SLOPE LENGTH OF 50. METERS.

SCS RUNOFF CURVE NUMBER = 86.20  
 FRACTION OF AREA ALLOWING RUNOFF = 100.0 PERCENT  
 AREA PROJECTED ON HORIZONTAL PLANE = 1.0000 HECTARES  
 EVAPORATIVE ZONE DEPTH = 20.0 CM  
 INITIAL WATER IN EVAPORATIVE ZONE = 2.991 CM

UPPER LIMIT OF EVAPORATIVE STORAGE = 8.340 CM  
 LOWER LIMIT OF EVAPORATIVE STORAGE = 0.360 CM  
 INITIAL SNOW WATER = 7.842 CM  
 INITIAL WATER IN LAYER MATERIALS = 100.714 CM  
 TOTAL INITIAL WATER = 108.555 CM  
 TOTAL SUBSURFACE INFLOW = 0.00 MM/YR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM  
ST-CHARLES-GARNIER QUEBEC

STATION LATITUDE = 48.33 DEGREES  
 MAXIMUM LEAF AREA INDEX = 0.00  
 START OF GROWING SEASON (JULIAN DATE) = 144  
 END OF GROWING SEASON (JULIAN DATE) = 260  
 EVAPORATIVE ZONE DEPTH = 20.0 CM  
 AVERAGE ANNUAL WIND SPEED = 13.70 KPH  
 AVERAGE 1ST QUARTER RELATIVE HUMIDITY = 70.00 %  
 AVERAGE 2ND QUARTER RELATIVE HUMIDITY = 69.00 %  
 AVERAGE 3RD QUARTER RELATIVE HUMIDITY = 76.00 %  
 AVERAGE 4TH QUARTER RELATIVE HUMIDITY = 78.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING  
COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY PRECIPITATION (MM)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
67.5	62.0	77.5	74.0	90.5	90.5
104.5	102.3	98.5	98.5	86.0	87.0

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING  
COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES CELSIUS)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-14.2	-12.2	-6.0	1.1	8.7	14.5
17.5	16.1	10.5	4.4	-2.5	-10.6

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING  
COEFFICIENTS FOR CARIBOU MAINE  
AND STATION LATITUDE = 48.33 DEGREES

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AVERAGE MONTHLY VALUES (MM) FOR YEARS 1 THROUGH 25

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-----						
PRECIPITATION						
-----						
TOTALS	75.14 106.67	75.05 93.01	70.32 96.04	53.24 97.61	83.53 84.77	87.05 81.64
STD. DEVIATIONS	20.77 33.67	28.64 35.94	40.00 41.30	19.52 32.38	31.27 25.76	36.26 32.08
RUNOFF						
-----						
TOTALS	0.000 2.831	0.053 1.625	45.022 3.026	243.909 2.400	31.210 13.515	1.932 0.539
STD. DEVIATIONS	0.000 5.864	0.264 1.894	60.133 4.961	94.034 4.162	54.292 19.893	2.795 1.752
EVAPOTRANSPIRATION						
-----						
TOTALS	8.113 74.580	7.462 67.044	12.408 53.056	10.704 30.449	56.876 11.739	67.749 7.217
STD. DEVIATIONS	1.093 19.428	1.166 22.033	2.388 11.810	4.432 5.725	16.852 4.200	23.903 0.943
LATERAL DRAINAGE COLLECTED FROM LAYER 3						
-----						
TOTALS	17.2413 26.1735	4.5252 22.8447	1.9040 23.6462	0.9571 32.4935	5.1768 39.2700	33.1285 45.5201
STD. DEVIATIONS	12.7124 10.1910	2.7570 10.0891	0.7962 12.3540	0.2291 16.2939	4.5523 18.2804	7.3214 23.6036
PERCOLATION/LEAKAGE THROUGH LAYER 4						
-----						
TOTALS	0.0001 0.0002	0.0000 0.0001	0.0000 0.0001	0.0000 0.0002	0.0000 0.0002	0.0002 0.0003
STD. DEVIATIONS	0.0001 0.0001	0.0000 0.0001	0.0000 0.0001	0.0000 0.0001	0.0000 0.0001	0.0000 0.0001

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AVERAGES OF MONTHLY AVERAGED DAILY HEADS (CM)  
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DAILY AVERAGE HEAD ON TOP OF LAYER 4

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-----						
AVERAGES	2.8183 4.2784	0.8127 3.7343	0.3112 3.9941	0.1617 5.3115	0.8462 6.6332	5.5958 7.4409
STD. DEVIATIONS	2.0780 1.6659	0.4976 1.6492	0.1302 2.0867	0.0387 2.6635	0.7441 3.0878	1.2367 3.8583

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 25

	MM		CU. METERS	PERCENT
	-----		-----	-----
PRECIPITATION	1004.06	( 106.025)	10040.6	100.00
RUNOFF	346.061	( 73.3522)	3460.61	34.466
EVAPOTRANSPIRATION	407.395	( 38.2172)	4073.95	40.575
LATERAL DRAINAGE COLLECTED FROM LAYER 3	252.88098	( 60.25352)	2528.810	25.18574
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00148	( 0.00035)	0.015	0.00015
AVERAGE HEAD ON TOP OF LAYER 4	34.949	( 8.326)		
CHANGE IN WATER STORAGE	-2.274	( 2.1091)	-22.74	-0.227

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PEAK DAILY VALUES FOR YEARS	1 THROUGH	25
	(MM)	(CU. METERS)
PRECIPITATION	63.40	634.000
RUNOFF	134.996	1349.9639
DRAINAGE COLLECTED FROM LAYER 3	3.61108	36.11076
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000021	0.00021
AVERAGE HEAD ON TOP OF LAYER 4	182.986	
MAXIMUM HEAD ON TOP OF LAYER 4	299.756	
LOCATION OF MAXIMUM HEAD IN LAYER 3 (DISTANCE FROM DRAIN)	9.3 METERS	
SNOW WATER	468.39	4683.8555
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.3781
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.0180

\*\*\* Maximum heads are computed using McEnroe's equations. \*\*\*

Reference: Maximum Saturated Depth over Landfill Liner  
by Bruce M. McEnroe, University of Kansas  
ASCE Journal of Environmental Engineering  
Vol. 119, No. 2, March 1993, pp. 262-270.

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FINAL WATER STORAGE AT END OF YEAR 25

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LAYER	(CM)	(VOL/VOL)
1	3.9462	0.1973
2	87.5999	0.2920
3	5.0492	0.0842
4	0.0000	0.0000
SNOW WATER	6.274	

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TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 0

THICKNESS = 45.00 CM  
POROSITY = 0.4170 VOL/VOL  
FIELD CAPACITY = 0.0450 VOL/VOL  
WILTING POINT = 0.0180 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.3666 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.200000009000E-02 CM/SEC  
SLOPE = 6.00 PERCENT  
DRAINAGE LENGTH = 100.0 METERS

LAYER 3

-----

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS = 0.10 CM  
POROSITY = 0.0000 VOL/VOL  
FIELD CAPACITY = 0.0000 VOL/VOL  
WILTING POINT = 0.0000 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.0000 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.199999996000E-12 CM/SEC  
FML PINHOLE DENSITY = 3.00 HOLES/HECTARE  
FML INSTALLATION DEFECTS = 3.00 HOLES/HECTARE  
FML PLACEMENT QUALITY = 3 - GOOD

LAYER 4

-----

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 0

THICKNESS = 300.00 CM  
POROSITY = 0.4170 VOL/VOL  
FIELD CAPACITY = 0.0450 VOL/VOL  
WILTING POINT = 0.0180 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.0518 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.100000005000E-02 CM/SEC

LAYER 5

-----

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 18

THICKNESS = 600.00 CM  
POROSITY = 0.6710 VOL/VOL  
FIELD CAPACITY = 0.2920 VOL/VOL  
WILTING POINT = 0.0770 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.2920 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.100000005000E-02 CM/SEC

LAYER 6

-----

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 1

THICKNESS	=	60.00	CM
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0450	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.999999978000E-02	CM/SEC
SLOPE	=	5.95	PERCENT
DRAINAGE LENGTH	=	52.0	METERS

LAYER 7

-----

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.15	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.00	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	0.00	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4	- POOR

LAYER 8

-----

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 1

THICKNESS	=	0.30	CM
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0450	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.999999978000E-02	CM/SEC

LAYER 9

-----

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 20

THICKNESS	=	0.50	CM
POROSITY	=	0.8500	VOL/VOL
FIELD CAPACITY	=	0.0100	VOL/VOL
WILTING POINT	=	0.0050	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0100	VOL/VOL

EFFECTIVE SAT. HYD. COND. = 10.0000000000 CM/SEC  
SLOPE = 5.95 PERCENT  
DRAINAGE LENGTH = 52.0 METERS

LAYER 10

-----

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS = 0.15 CM  
POROSITY = 0.0000 VOL/VOL  
FIELD CAPACITY = 0.0000 VOL/VOL  
WILTING POINT = 0.0000 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.0000 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.199999996000E-12 CM/SEC  
FML PINHOLE DENSITY = 0.00 HOLES/HECTARE  
FML INSTALLATION DEFECTS = 0.00 HOLES/HECTARE  
FML PLACEMENT QUALITY = 4 - POOR

LAYER 11

-----

TYPE 3 - BARRIER SOIL LINER

MATERIAL TEXTURE NUMBER 17

THICKNESS = 0.50 CM  
POROSITY = 0.7500 VOL/VOL  
FIELD CAPACITY = 0.7470 VOL/VOL  
WILTING POINT = 0.4000 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.7500 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.300000003000E-08 CM/SEC

LAYER 12

-----

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 0

THICKNESS = 15.00 CM  
POROSITY = 0.4170 VOL/VOL  
FIELD CAPACITY = 0.0450 VOL/VOL  
WILTING POINT = 0.0180 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.0450 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.100000005000E-02 CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

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NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT  
SOIL DATA BASE USING SOIL TEXTURE # 5 WITH A

GOOD STAND OF GRASS, A SURFACE SLOPE OF 6. %  
AND A SLOPE LENGTH OF 100. METERS.

SCS RUNOFF CURVE NUMBER	=	56.60	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.0000	HECTARES
EVAPORATIVE ZONE DEPTH	=	20.0	CM
INITIAL WATER IN EVAPORATIVE ZONE	=	8.458	CM
UPPER LIMIT OF EVAPORATIVE STORAGE	=	8.940	CM
LOWER LIMIT OF EVAPORATIVE STORAGE	=	0.960	CM
INITIAL SNOW WATER	=	7.842	CM
INITIAL WATER IN LAYER MATERIALS	=	217.351	CM
TOTAL INITIAL WATER	=	225.193	CM
TOTAL SUBSURFACE INFLOW	=	0.00	MM/YR

EVAPOTRANSPIRATION AND WEATHER DATA  
-----

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM  
ST-CHARLES-GARNIER QUEBEC

STATION LATITUDE	=	48.33	DEGREES
MAXIMUM LEAF AREA INDEX	=	0.00	
START OF GROWING SEASON (JULIAN DATE)	=	144	
END OF GROWING SEASON (JULIAN DATE)	=	260	
EVAPORATIVE ZONE DEPTH	=	20.0	CM
AVERAGE ANNUAL WIND SPEED	=	13.70	KPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	70.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	69.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	76.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	78.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING  
COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY PRECIPITATION (MM)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-----	-----	-----	-----	-----	-----
67.5	62.0	77.5	74.0	90.5	90.5
104.5	102.3	98.5	98.5	86.0	87.0

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING  
COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES CELSIUS)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-----	-----	-----	-----	-----	-----
-14.2	-12.2	-6.0	1.1	8.7	14.5
17.5	16.1	10.5	4.4	-2.5	-10.6

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING  
 COEFFICIENTS FOR CARIBOU MAINE  
 AND STATION LATITUDE = 48.33 DEGREES

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AVERAGE MONTHLY VALUES (MM) FOR YEARS 1 THROUGH 25

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-----						
PRECIPITATION						
-----						
TOTALS	75.14 106.67	75.05 93.01	70.32 96.04	53.24 97.61	83.53 84.77	87.05 81.64
STD. DEVIATIONS	20.77 33.67	28.64 35.94	40.00 41.30	19.52 32.38	31.27 25.76	36.26 32.08
RUNOFF						
-----						
TOTALS	0.000 0.000	0.042 0.224	49.260 0.000	253.776 1.408	33.050 16.740	0.000 0.597
STD. DEVIATIONS	0.000 0.000	0.211 1.122	66.980 0.000	95.975 5.616	57.327 20.148	0.000 1.852
EVAPOTRANSPIRATION						
-----						
TOTALS	8.113 76.863	7.462 69.918	12.408 54.260	10.698 30.934	59.783 11.742	70.616 7.217
STD. DEVIATIONS	1.093 19.142	1.166 21.790	2.388 11.163	4.424 5.629	16.979 4.203	24.382 0.943
LATERAL DRAINAGE COLLECTED FROM LAYER 2						
-----						
TOTALS	16.4081 16.5832	12.3287 17.2877	11.1601 18.8969	8.9343 22.3139	14.4370 24.3549	16.0305 19.9293
STD. DEVIATIONS	3.3371 2.7785	2.5286 4.4871	2.2920 4.6347	1.7249 6.2283	2.0788 6.0310	2.5136 4.0932
PERCOLATION/LEAKAGE THROUGH LAYER 3						
-----						
TOTALS	2.7413 2.7685	2.1237 2.8756	1.9866 3.0961	1.6460 3.6370	2.4574 3.9999	2.6770 3.2442
STD. DEVIATIONS	0.4816 0.3953	0.3730 0.6642	0.3453 0.6843	0.2675 0.9615	0.3005 0.9863	0.3568 0.5895
LATERAL DRAINAGE COLLECTED FROM LAYER 6						
-----						
TOTALS	1.7774 2.8448	1.2744 2.7145	1.3224 2.3414	1.5627 2.1449	2.0339 1.9428	2.2964 2.0514

STD. DEVIATIONS	1.2098	0.9289	0.9877	1.1150	1.3252	1.4360
	1.6896	1.5963	1.3764	1.2770	1.1818	1.2707

PERCOLATION/LEAKAGE THROUGH LAYER 7

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LATERAL DRAINAGE COLLECTED FROM LAYER 9

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 11

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 12

TOTALS	0.0008	0.0007	0.0008	0.0008	0.0008	0.0008
	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008
STD. DEVIATIONS	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004
	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (CM)

DAILY AVERAGE HEAD ON TOP OF LAYER 3

AVERAGES	25.6189	21.1251	17.4249	14.4147	22.5413	25.8637
	25.8958	27.1028	30.7045	35.5913	41.1316	31.1918
STD. DEVIATIONS	5.2104	4.3127	3.5786	2.7830	3.2458	4.0554
	4.3435	7.3514	7.8293	10.6959	11.3415	6.4870

DAILY AVERAGE HEAD ON TOP OF LAYER 7

AVERAGES	0.2910	0.2291	0.2165	0.2644	0.3330	0.3885
	0.4658	0.4445	0.3961	0.3512	0.3287	0.3359
STD. DEVIATIONS	0.1981	0.1677	0.1617	0.1886	0.2170	0.2430
	0.2767	0.2614	0.2329	0.2091	0.2000	0.2081

DAILY AVERAGE HEAD ON TOP OF LAYER 10

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS				1	THROUGH	25
	MM		CU. METERS	PERCENT		
	-----	-----	-----	-----		
PRECIPITATION	1004.06	( 106.025)	10040.6	100.00		
RUNOFF	355.097	( 76.7058)	3550.97	35.366		
EVAPOTRANSPIRATION	420.013	( 38.0076)	4200.13	41.831		
LATERAL DRAINAGE COLLECTED FROM LAYER 2	198.66452	( 29.60174)	1986.645	19.78604		
PERCOLATION/LEAKAGE THROUGH LAYER 3	33.25311	( 4.42304)	332.531	3.31185		
AVERAGE HEAD ON TOP OF LAYER 3	265.505	( 40.934)				
LATERAL DRAINAGE COLLECTED FROM LAYER 6	24.30701	( 14.48870)	243.070	2.42086		
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.00015	( 0.00008)	0.001	0.00001		
AVERAGE HEAD ON TOP OF LAYER 7	3.371	( 2.009)				
LATERAL DRAINAGE COLLECTED FROM LAYER 9	0.00014	( 0.00008)	0.001	0.00001		
PERCOLATION/LEAKAGE THROUGH LAYER 11	0.00001	( 0.00000)	0.000	0.00000		
AVERAGE HEAD ON TOP OF LAYER 10	0.000	( 0.000)				
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.00934	( 0.00440)	0.093	0.00093		
CHANGE IN WATER STORAGE	5.973	( 2.2575)	59.73	0.595		

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PEAK DAILY VALUES FOR YEARS	1 THROUGH	25
	(MM)	(CU. METERS)
PRECIPITATION	63.40	634.000
RUNOFF	135.883	1358.8269
DRAINAGE COLLECTED FROM LAYER 2	1.08465	10.84654
PERCOLATION/LEAKAGE THROUGH LAYER 3	0.187852	1.87852
AVERAGE HEAD ON TOP OF LAYER 3	599.995	
MAXIMUM HEAD ON TOP OF LAYER 3	915.205	
LOCATION OF MAXIMUM HEAD IN LAYER 2 (DISTANCE FROM DRAIN)	23.5 METERS	
DRAINAGE COLLECTED FROM LAYER 6	0.14829	1.48289
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.000001	0.00001
AVERAGE HEAD ON TOP OF LAYER 7	7.527	
MAXIMUM HEAD ON TOP OF LAYER 7	14.736	
LOCATION OF MAXIMUM HEAD IN LAYER 6 (DISTANCE FROM DRAIN)	0.9 METERS	
DRAINAGE COLLECTED FROM LAYER 9	0.00000	0.00001
PERCOLATION/LEAKAGE THROUGH LAYER 11	0.000000	0.00000
AVERAGE HEAD ON TOP OF LAYER 10	0.000	
MAXIMUM HEAD ON TOP OF LAYER 10	0.065	
LOCATION OF MAXIMUM HEAD IN LAYER 9 (DISTANCE FROM DRAIN)	0.0 METERS	
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.000038	0.00038
SNOW WATER	468.39	4683.8555
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.4470
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.0480

\*\*\* Maximum heads are computed using McEnroe's equations. \*\*\*

Reference: Maximum Saturated Depth over Landfill Liner  
by Bruce M. McEnroe, University of Kansas  
ASCE Journal of Environmental Engineering  
Vol. 119, No. 2, March 1993, pp. 262-270.

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FINAL WATER STORAGE AT END OF YEAR 25

LAYER	(CM)	(VOL/VOL)
1	4.7132	0.3142
2	12.2816	0.2729
3	0.0000	0.0000
4	36.3447	0.1211
5	175.2000	0.2920
6	4.2670	0.0711
7	0.0000	0.0000
8	0.0135	0.0450
9	0.0050	0.0100
10	0.0000	0.0000
11	0.3750	0.7500
12	0.6510	0.0434
SNOW WATER	6.274	

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TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 0

THICKNESS = 45.00 CM  
 POROSITY = 0.4170 VOL/VOL  
 FIELD CAPACITY = 0.0450 VOL/VOL  
 WILTING POINT = 0.0180 VOL/VOL  
 INITIAL SOIL WATER CONTENT = 0.3666 VOL/VOL  
 EFFECTIVE SAT. HYD. COND. = 0.200000009000E-02 CM/SEC  
 SLOPE = 6.00 PERCENT  
 DRAINAGE LENGTH = 100.0 METERS

LAYER 3

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TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS = 0.10 CM  
 POROSITY = 0.0000 VOL/VOL  
 FIELD CAPACITY = 0.0000 VOL/VOL  
 WILTING POINT = 0.0000 VOL/VOL  
 INITIAL SOIL WATER CONTENT = 0.0000 VOL/VOL  
 EFFECTIVE SAT. HYD. COND. = 0.199999996000E-12 CM/SEC  
 FML PINHOLE DENSITY = 3.00 HOLES/HECTARE  
 FML INSTALLATION DEFECTS = 3.00 HOLES/HECTARE  
 FML PLACEMENT QUALITY = 3 - GOOD

LAYER 4

-----

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 0

THICKNESS = 300.00 CM  
 POROSITY = 0.4170 VOL/VOL  
 FIELD CAPACITY = 0.0450 VOL/VOL  
 WILTING POINT = 0.0180 VOL/VOL  
 INITIAL SOIL WATER CONTENT = 0.0518 VOL/VOL  
 EFFECTIVE SAT. HYD. COND. = 0.100000005000E-02 CM/SEC

LAYER 5

-----

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 18

THICKNESS = 600.00 CM  
 POROSITY = 0.6710 VOL/VOL  
 FIELD CAPACITY = 0.2920 VOL/VOL  
 WILTING POINT = 0.0770 VOL/VOL  
 INITIAL SOIL WATER CONTENT = 0.2920 VOL/VOL  
 EFFECTIVE SAT. HYD. COND. = 0.100000005000E-02 CM/SEC

LAYER 6

-----

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 1

THICKNESS	=	60.00	CM
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0450	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.999999978000E-02	CM/SEC
SLOPE	=	5.95	PERCENT
DRAINAGE LENGTH	=	52.0	METERS

LAYER 7

-----

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.15	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.00	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	0.00	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4 - POOR	

LAYER 8

-----

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 1

THICKNESS	=	0.30	CM
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0450	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.999999978000E-02	CM/SEC

LAYER 9

-----

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 20

THICKNESS	=	0.50	CM
POROSITY	=	0.8500	VOL/VOL
FIELD CAPACITY	=	0.0100	VOL/VOL
WILTING POINT	=	0.0050	VOL/VOL

INITIAL SOIL WATER CONTENT = 0.0100 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 10.0000000000 CM/SEC  
SLOPE = 5.95 PERCENT  
DRAINAGE LENGTH = 52.0 METERS

LAYER 10

-----

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS = 0.15 CM  
POROSITY = 0.0000 VOL/VOL  
FIELD CAPACITY = 0.0000 VOL/VOL  
WILTING POINT = 0.0000 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.0000 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.199999996000E-12 CM/SEC  
FML PINHOLE DENSITY = 0.00 HOLES/HECTARE  
FML INSTALLATION DEFECTS = 0.00 HOLES/HECTARE  
FML PLACEMENT QUALITY = 4 - POOR

LAYER 11

-----

TYPE 3 - BARRIER SOIL LINER

MATERIAL TEXTURE NUMBER 17

THICKNESS = 0.50 CM  
POROSITY = 0.7500 VOL/VOL  
FIELD CAPACITY = 0.7470 VOL/VOL  
WILTING POINT = 0.4000 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.7500 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.300000003000E-08 CM/SEC

LAYER 12

-----

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 0

THICKNESS = 15.00 CM  
POROSITY = 0.4170 VOL/VOL  
FIELD CAPACITY = 0.0450 VOL/VOL  
WILTING POINT = 0.0180 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.0450 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.100000005000E-02 CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

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NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT

SOIL DATA BASE USING SOIL TEXTURE # 5 WITH A  
 POOR STAND OF GRASS, A SURFACE SLOPE OF 6. %  
 AND A SLOPE LENGTH OF 100. METERS.

SCS RUNOFF CURVE NUMBER = 77.60  
 FRACTION OF AREA ALLOWING RUNOFF = 100.0 PERCENT  
 AREA PROJECTED ON HORIZONTAL PLANE = 1.0000 HECTARES  
 EVAPORATIVE ZONE DEPTH = 20.0 CM  
 INITIAL WATER IN EVAPORATIVE ZONE = 8.483 CM  
 UPPER LIMIT OF EVAPORATIVE STORAGE = 8.940 CM  
 LOWER LIMIT OF EVAPORATIVE STORAGE = 0.960 CM  
 INITIAL SNOW WATER = 7.842 CM  
 INITIAL WATER IN LAYER MATERIALS = 217.380 CM  
 TOTAL INITIAL WATER = 225.222 CM  
 TOTAL SUBSURFACE INFLOW = 0.00 MM/YR

EVAPOTRANSPIRATION AND WEATHER DATA  
 -----

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM  
 ST-CHARLES-GARNIER QUEBEC

STATION LATITUDE = 48.33 DEGREES  
 MAXIMUM LEAF AREA INDEX = 0.00  
 START OF GROWING SEASON (JULIAN DATE) = 144  
 END OF GROWING SEASON (JULIAN DATE) = 260  
 EVAPORATIVE ZONE DEPTH = 20.0 CM  
 AVERAGE ANNUAL WIND SPEED = 13.70 KPH  
 AVERAGE 1ST QUARTER RELATIVE HUMIDITY = 70.00 %  
 AVERAGE 2ND QUARTER RELATIVE HUMIDITY = 69.00 %  
 AVERAGE 3RD QUARTER RELATIVE HUMIDITY = 76.00 %  
 AVERAGE 4TH QUARTER RELATIVE HUMIDITY = 78.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING  
 COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY PRECIPITATION (MM)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
67.5	62.0	77.5	74.0	90.5	90.5
104.5	102.3	98.5	98.5	86.0	87.0

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING  
 COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES CELSIUS)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-14.2	-12.2	-6.0	1.1	8.7	14.5
17.5	16.1	10.5	4.4	-2.5	-10.6

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING  
 COEFFICIENTS FOR CARIBOU MAINE  
 AND STATION LATITUDE = 48.33 DEGREES

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AVERAGE MONTHLY VALUES (MM) FOR YEARS 1 THROUGH 25

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-----						
PRECIPITATION						
-----						
TOTALS	75.14 106.67	75.05 93.01	70.32 96.04	53.24 97.61	83.53 84.77	87.05 81.64
STD. DEVIATIONS	20.77 33.67	28.64 35.94	40.00 41.30	19.52 32.38	31.27 25.76	36.26 32.08
RUNOFF						
-----						
TOTALS	0.000 0.517	0.042 0.065	49.064 0.446	253.456 1.753	33.308 16.487	0.164 0.594
STD. DEVIATIONS	0.000 2.052	0.211 0.156	66.903 1.253	96.113 5.616	57.290 20.166	0.450 1.839
EVAPOTRANSPIRATION						
-----						
TOTALS	8.113 76.913	7.462 69.852	12.408 54.230	10.747 30.929	59.727 11.742	70.618 7.217
STD. DEVIATIONS	1.093 19.172	1.166 21.847	2.388 11.149	4.566 5.670	16.827 4.203	24.413 0.943
LATERAL DRAINAGE COLLECTED FROM LAYER 2						
-----						
TOTALS	16.3943 16.4982	12.3183 17.2079	11.1506 18.7610	8.9261 22.1999	14.4042 24.2773	15.9820 19.9139
STD. DEVIATIONS	3.3546 2.7647	2.5419 4.4318	2.3039 4.5851	1.7325 6.1692	2.0958 6.0146	2.5078 4.1134
PERCOLATION/LEAKAGE THROUGH LAYER 3						
-----						
TOTALS	2.7393 2.7563	2.1221 2.8618	1.9851 3.0752	1.6447 3.6142	2.4527 3.9828	2.6701 3.2420
STD. DEVIATIONS	0.4841 0.3934	0.3750 0.6484	0.3472 0.6762	0.2687 0.9463	0.3030 0.9797	0.3562 0.5924
LATERAL DRAINAGE COLLECTED FROM LAYER 6						
-----						
TOTALS	1.7793 2.8263	1.2799 2.7033	1.3194 2.3316	1.5479 2.1394	2.0128 1.9370	2.2748 2.0473

STD. DEVIATIONS	1.2090	0.9253	0.9830	1.1042	1.3138	1.4249
	1.6807	1.5901	1.3709	1.2737	1.1761	1.2685

PERCOLATION/LEAKAGE THROUGH LAYER 7

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LATERAL DRAINAGE COLLECTED FROM LAYER 9

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 11

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 12

TOTALS	0.0008	0.0007	0.0008	0.0008	0.0008	0.0008
	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008
STD. DEVIATIONS	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004
	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (CM)

DAILY AVERAGE HEAD ON TOP OF LAYER 3

AVERAGES	25.5973	21.1073	17.4101	14.4013	22.4900	25.7855
	25.7605	26.9507	30.4649	35.3362	40.9354	31.1678
STD. DEVIATIONS	5.2377	4.3352	3.5972	2.7953	3.2722	4.0461
	4.3178	7.1704	7.7306	10.5227	11.2647	6.5184

DAILY AVERAGE HEAD ON TOP OF LAYER 7

AVERAGES	0.2913	0.2301	0.2160	0.2619	0.3296	0.3849
	0.4628	0.4426	0.3945	0.3503	0.3277	0.3352
STD. DEVIATIONS	0.1980	0.1671	0.1610	0.1868	0.2151	0.2411
	0.2752	0.2604	0.2319	0.2085	0.1990	0.2077

DAILY AVERAGE HEAD ON TOP OF LAYER 10

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS				1	THROUGH	25
	MM		CU. METERS	PERCENT		
	-----		-----	-----		
PRECIPITATION	1004.06	( 106.025)	10040.6	100.00		
RUNOFF	355.894	( 77.5500)	3558.94	35.445		
EVAPOTRANSPIRATION	419.957	( 38.1109)	4199.57	41.826		
LATERAL DRAINAGE COLLECTED FROM LAYER 2	198.03366	( 29.70792)	1980.337	19.72321		
PERCOLATION/LEAKAGE THROUGH LAYER 3	33.14618	( 4.43378)	331.462	3.30120		
AVERAGE HEAD ON TOP OF LAYER 3	264.506	( 41.013)				
LATERAL DRAINAGE COLLECTED FROM LAYER 6	24.19903	( 14.43639)	241.990	2.41011		
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.00015	( 0.00008)	0.001	0.00001		
AVERAGE HEAD ON TOP OF LAYER 7	3.356	( 2.002)				
LATERAL DRAINAGE COLLECTED FROM LAYER 9	0.00014	( 0.00008)	0.001	0.00001		
PERCOLATION/LEAKAGE THROUGH LAYER 11	0.00001	( 0.00000)	0.000	0.00000		
AVERAGE HEAD ON TOP OF LAYER 10	0.000	( 0.000)				
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.00936	( 0.00437)	0.094	0.00093		
CHANGE IN WATER STORAGE	5.971	( 2.2685)	59.71	0.595		

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PEAK DAILY VALUES FOR YEARS	1 THROUGH	25
	(MM)	(CU. METERS)
PRECIPITATION	63.40	634.000
RUNOFF	135.883	1358.8269
DRAINAGE COLLECTED FROM LAYER 2	1.08465	10.84654
PERCOLATION/LEAKAGE THROUGH LAYER 3	0.187852	1.87852
AVERAGE HEAD ON TOP OF LAYER 3	599.995	
MAXIMUM HEAD ON TOP OF LAYER 3	915.205	
LOCATION OF MAXIMUM HEAD IN LAYER 2 (DISTANCE FROM DRAIN)	23.5 METERS	
DRAINAGE COLLECTED FROM LAYER 6	0.14815	1.48152
PERCOLATION/LEAKAGE THROUGH LAYER 7	0.000001	0.00001
AVERAGE HEAD ON TOP OF LAYER 7	7.520	
MAXIMUM HEAD ON TOP OF LAYER 7	14.723	
LOCATION OF MAXIMUM HEAD IN LAYER 6 (DISTANCE FROM DRAIN)	0.9 METERS	
DRAINAGE COLLECTED FROM LAYER 9	0.00000	0.00001
PERCOLATION/LEAKAGE THROUGH LAYER 11	0.000000	0.00000
AVERAGE HEAD ON TOP OF LAYER 10	0.000	
MAXIMUM HEAD ON TOP OF LAYER 10	0.064	
LOCATION OF MAXIMUM HEAD IN LAYER 9 (DISTANCE FROM DRAIN)	0.0 METERS	
PERCOLATION/LEAKAGE THROUGH LAYER 12	0.000038	0.00038
SNOW WATER	468.39	4683.8555
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.4470
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.0480

\*\*\* Maximum heads are computed using McEnroe's equations. \*\*\*

Reference: Maximum Saturated Depth over Landfill Liner  
by Bruce M. McEnroe, University of Kansas  
ASCE Journal of Environmental Engineering  
Vol. 119, No. 2, March 1993, pp. 262-270.

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FINAL WATER STORAGE AT END OF YEAR 25

LAYER	(CM)	(VOL/VOL)
1	4.7132	0.3142
2	12.2989	0.2733
3	0.0000	0.0000
4	36.3524	0.1212
5	175.2000	0.2920
6	4.2664	0.0711
7	0.0000	0.0000
8	0.0135	0.0450
9	0.0050	0.0100
10	0.0000	0.0000
11	0.3750	0.7500
12	0.6510	0.0434
SNOW WATER	6.274	

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TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 18

THICKNESS = 300.00 CM  
POROSITY = 0.6710 VOL/VOL  
FIELD CAPACITY = 0.2920 VOL/VOL  
WILTING POINT = 0.0770 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.2920 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.100000005000E-02 CM/SEC

LAYER 3

-----

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 1

THICKNESS = 60.00 CM  
POROSITY = 0.4170 VOL/VOL  
FIELD CAPACITY = 0.0450 VOL/VOL  
WILTING POINT = 0.0180 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.1707 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.999999978000E-02 CM/SEC  
SLOPE = 5.95 PERCENT  
DRAINAGE LENGTH = 52.0 METERS

LAYER 4

-----

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS = 0.15 CM  
POROSITY = 0.0000 VOL/VOL  
FIELD CAPACITY = 0.0000 VOL/VOL  
WILTING POINT = 0.0000 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.0000 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.199999996000E-12 CM/SEC  
FML PINHOLE DENSITY = 0.00 HOLES/HECTARE  
FML INSTALLATION DEFECTS = 0.00 HOLES/HECTARE  
FML PLACEMENT QUALITY = 4 - POOR

LAYER 5

-----

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 0

THICKNESS = 0.30 CM  
POROSITY = 0.4170 VOL/VOL  
FIELD CAPACITY = 0.0450 VOL/VOL  
WILTING POINT = 0.0180 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.0450 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.100000005000E-02 CM/SEC

LAYER 6

-----

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 20

THICKNESS	=	0.50	CM
POROSITY	=	0.8500	VOL/VOL
FIELD CAPACITY	=	0.0100	VOL/VOL
WILTING POINT	=	0.0050	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	10.0000000000	CM/SEC
SLOPE	=	5.95	PERCENT
DRAINAGE LENGTH	=	52.0	METERS

LAYER 7

-----

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.15	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.00	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	0.00	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4	- POOR

LAYER 8

-----

TYPE 3 - BARRIER SOIL LINER

MATERIAL TEXTURE NUMBER 17

THICKNESS	=	0.50	CM
POROSITY	=	0.7500	VOL/VOL
FIELD CAPACITY	=	0.7470	VOL/VOL
WILTING POINT	=	0.4000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.7500	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.300000003000E-08	CM/SEC

LAYER 9

-----

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 0

THICKNESS	=	15.00	CM
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL

INITIAL SOIL WATER CONTENT = 0.0449 VOL/VOL  
 EFFECTIVE SAT. HYD. COND. = 0.100000005000E-02 CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA  
 -----

NOTE: SCS RUNOFF CURVE NUMBER WAS USER-SPECIFIED.

SCS RUNOFF CURVE NUMBER = 0.00  
 FRACTION OF AREA ALLOWING RUNOFF = 0.0 PERCENT  
 AREA PROJECTED ON HORIZONTAL PLANE = 1.0000 HECTARES  
 EVAPORATIVE ZONE DEPTH = 20.0 CM  
 INITIAL WATER IN EVAPORATIVE ZONE = 2.991 CM  
 UPPER LIMIT OF EVAPORATIVE STORAGE = 8.340 CM  
 LOWER LIMIT OF EVAPORATIVE STORAGE = 0.360 CM  
 INITIAL SNOW WATER = 7.842 CM  
 INITIAL WATER IN LAYER MATERIALS = 101.903 CM  
 TOTAL INITIAL WATER = 109.744 CM  
 TOTAL SUBSURFACE INFLOW = 0.00 MM/YR

EVAPOTRANSPIRATION AND WEATHER DATA  
 -----

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM  
 ST-CHARLES-GARNIER QUEBEC

STATION LATITUDE = 48.33 DEGREES  
 MAXIMUM LEAF AREA INDEX = 0.00  
 START OF GROWING SEASON (JULIAN DATE) = 144  
 END OF GROWING SEASON (JULIAN DATE) = 260  
 EVAPORATIVE ZONE DEPTH = 20.0 CM  
 AVERAGE ANNUAL WIND SPEED = 13.70 KPH  
 AVERAGE 1ST QUARTER RELATIVE HUMIDITY = 70.00 %  
 AVERAGE 2ND QUARTER RELATIVE HUMIDITY = 69.00 %  
 AVERAGE 3RD QUARTER RELATIVE HUMIDITY = 76.00 %  
 AVERAGE 4TH QUARTER RELATIVE HUMIDITY = 78.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING  
 COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY PRECIPITATION (MM)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
67.5	62.0	77.5	74.0	90.5	90.5
104.5	102.3	98.5	98.5	86.0	87.0

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING  
 COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES CELSIUS)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-14.2	-12.2	-6.0	1.1	8.7	14.5
17.5	16.1	10.5	4.4	-2.5	-10.6

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING  
 COEFFICIENTS FOR CARIBOU MAINE  
 AND STATION LATITUDE = 48.33 DEGREES

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AVERAGE MONTHLY VALUES (MM) FOR YEARS 1 THROUGH 25

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	75.14 106.67	75.05 93.01	70.32 96.04	53.24 97.61	83.53 84.77	87.05 81.64
STD. DEVIATIONS	20.77 33.67	28.64 35.94	40.00 41.30	19.52 32.38	31.27 25.76	36.26 32.08
RUNOFF						
TOTALS	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000
STD. DEVIATIONS	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000
EVAPOTRANSPIRATION						
TOTALS	8.113 74.598	7.462 67.023	12.408 53.070	10.704 30.428	56.949 11.739	67.808 7.217
STD. DEVIATIONS	1.093 19.307	1.166 22.029	2.388 11.856	4.432 5.718	16.850 4.199	23.856 0.943
LATERAL DRAINAGE COLLECTED FROM LAYER 3						
TOTALS	19.3282 61.4949	5.0102 32.6889	2.1162 27.0359	34.4540 35.4197	162.9871 41.5703	126.7141 49.4448
STD. DEVIATIONS	12.3534 17.4931	2.6792 13.6708	0.8648 14.4699	38.1258 17.8983	66.4063 19.7045	22.2980 23.6075
PERCOLATION/LEAKAGE THROUGH LAYER 4						
TOTALS	0.0001 0.0004	0.0000 0.0002	0.0000 0.0002	0.0002 0.0002	0.0010 0.0002	0.0007 0.0003



STD. DEVIATIONS	0.0001	0.0000	0.0000	0.0002	0.0004	0.0001
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

LATERAL DRAINAGE COLLECTED FROM LAYER 6

TOTALS	0.0001	0.0000	0.0000	0.0001	0.0003	0.0005
	0.0008	0.0007	0.0003	0.0002	0.0002	0.0003
STD. DEVIATIONS	0.0001	0.0000	0.0000	0.0001	0.0002	0.0001
	0.0002	0.0004	0.0002	0.0001	0.0001	0.0001

PERCOLATION/LEAKAGE THROUGH LAYER 8

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 9

TOTALS	0.0009	0.0009	0.0009	0.0009	0.0007	0.0009
	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009
STD. DEVIATIONS	0.0001	0.0001	0.0001	0.0001	0.0003	0.0001
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (CM)

DAILY AVERAGE HEAD ON TOP OF LAYER 4

AVERAGES	3.1647	0.9011	0.3465	5.8294	26.7620	21.4392
	10.0689	5.3523	4.5743	5.7995	7.0334	8.0959
STD. DEVIATIONS	2.0227	0.4846	0.1416	6.4506	11.0756	3.7727
	2.8642	2.2384	2.4482	2.9306	3.3339	3.8654

DAILY AVERAGE HEAD ON TOP OF LAYER 7

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 25

	MM	CU. METERS	PERCENT
PRECIPITATION	1004.06 ( 106.025)	10040.6	100.00

RUNOFF	0.000	( 0.0000)	0.00	0.000
EVAPOTRANSPIRATION	407.518	( 38.1384)	4075.18	40.587
LATERAL DRAINAGE COLLECTED FROM LAYER 3	598.26398	(115.63283)	5982.640	59.58425
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00350	( 0.00068)	0.035	0.00035
AVERAGE HEAD ON TOP OF LAYER 4	82.806	( 16.054)		
LATERAL DRAINAGE COLLECTED FROM LAYER 6	0.00349	( 0.00068)	0.035	0.00035
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.00001	( 0.00000)	0.000	0.00000
AVERAGE HEAD ON TOP OF LAYER 7	0.000	( 0.000)		
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.01078	( 0.00126)	0.108	0.00107
CHANGE IN WATER STORAGE	-1.732	( 2.5366)	-17.32	-0.173

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PEAK DAILY VALUES FOR YEARS	1 THROUGH 25	
	(MM)	(CU. METERS)
PRECIPITATION	63.40	634.000
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 3	12.01604	120.16043
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000079	0.00079
AVERAGE HEAD ON TOP OF LAYER 4	689.508	
MAXIMUM HEAD ON TOP OF LAYER 4	912.863	
LOCATION OF MAXIMUM HEAD IN LAYER 3 (DISTANCE FROM DRAIN)	17.5 METERS	
DRAINAGE COLLECTED FROM LAYER 6	0.00004	0.00038
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.000000	0.00000
AVERAGE HEAD ON TOP OF LAYER 7	0.000	
MAXIMUM HEAD ON TOP OF LAYER 7	0.437	
LOCATION OF MAXIMUM HEAD IN LAYER 6 (DISTANCE FROM DRAIN)	0.0 METERS	
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.000037	0.00037
SNOW WATER	468.39	4683.8555
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.4170
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.0180

\*\*\* Maximum heads are computed using McEnroe's equations. \*\*\*

Reference: Maximum Saturated Depth over Landfill Liner  
 by Bruce M. McEnroe, University of Kansas  
 ASCE Journal of Environmental Engineering  
 Vol. 119, No. 2, March 1993, pp. 262-270.

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FINAL WATER STORAGE AT END OF YEAR 25

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LAYER	(CM)	(VOL/VOL)
1	5.4469	0.2723
2	87.5999	0.2920
3	5.0529	0.0842
4	0.0000	0.0000
5	0.0135	0.0450
6	0.0050	0.0100
7	0.0000	0.0000
8	0.3750	0.7500
9	0.6467	0.0431
SNOW WATER	6.274	

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\*\* HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE \*\*  
\*\* HELP MODEL VERSION 3.07 (1 NOVEMBER 1997) \*\*  
\*\* DEVELOPED BY ENVIRONMENTAL LABORATORY \*\*  
\*\* USAE WATERWAYS EXPERIMENT STATION \*\*  
\*\* FOR USEPA RISK REDUCTION ENGINEERING LABORATORY \*\*  
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PRECIPITATION DATA FILE: C:\DOCUME~2\LOGICI~1\HELP307\30189.D4  
TEMPERATURE DATA FILE: C:\DOCUME~2\LOGICI~1\HELP307\30189.D7  
SOLAR RADIATION DATA FILE: C:\DOCUME~2\LOGICI~1\HELP307\30189.D13  
EVAPOTRANSPIRATION DATA: C:\DOCUME~2\LOGICI~1\HELP307\30189.D11  
SOIL AND DESIGN DATA FILE: C:\DOCUME~2\LOGICI~1\HELP307\301896M.D10  
OUTPUT DATA FILE: C:\DOCUME~2\LOGICI~1\HELP307\301896m.OUT

TIME: 10:50 DATE: 2/ 3/2006

\*\*\*\*\*  
TITLE: RIGMRIM - Cellule avec 6m de MR  
\*\*\*\*\*

NOTE: INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE  
COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.

LAYER 1  
-----

TYPE 1 - VERTICAL PERCOLATION LAYER  
MATERIAL TEXTURE NUMBER 0  
THICKNESS = 20.00 CM  
POROSITY = 0.4170 VOL/VOL  
FIELD CAPACITY = 0.0450 VOL/VOL  
WILTING POINT = 0.0180 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.1496 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.10000005000E-02 CM/SEC

LAYER 2  
-----

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 18

THICKNESS = 600.00 CM  
POROSITY = 0.6710 VOL/VOL  
FIELD CAPACITY = 0.2920 VOL/VOL  
WILTING POINT = 0.0770 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.2979 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.100000005000E-02 CM/SEC

LAYER 3

-----

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 1

THICKNESS = 60.00 CM  
POROSITY = 0.4170 VOL/VOL  
FIELD CAPACITY = 0.0450 VOL/VOL  
WILTING POINT = 0.0180 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.1791 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.999999978000E-02 CM/SEC  
SLOPE = 5.95 PERCENT  
DRAINAGE LENGTH = 52.0 METERS

LAYER 4

-----

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS = 0.15 CM  
POROSITY = 0.0000 VOL/VOL  
FIELD CAPACITY = 0.0000 VOL/VOL  
WILTING POINT = 0.0000 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.0000 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.199999996000E-12 CM/SEC  
FML PINHOLE DENSITY = 0.00 HOLES/HECTARE  
FML INSTALLATION DEFECTS = 0.00 HOLES/HECTARE  
FML PLACEMENT QUALITY = 4 - POOR

LAYER 5

-----

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 0

THICKNESS = 0.30 CM  
POROSITY = 0.4170 VOL/VOL  
FIELD CAPACITY = 0.0450 VOL/VOL  
WILTING POINT = 0.0180 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.0450 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.100000005000E-02 CM/SEC

LAYER 6

-----

TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 20

THICKNESS	=	0.50	CM
POROSITY	=	0.8500	VOL/VOL
FIELD CAPACITY	=	0.0100	VOL/VOL
WILTING POINT	=	0.0050	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	10.0000000000	CM/SEC
SLOPE	=	5.95	PERCENT
DRAINAGE LENGTH	=	52.0	METERS

LAYER 7

-----

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.15	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.00	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	0.00	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4	- POOR

LAYER 8

-----

TYPE 3 - BARRIER SOIL LINER

MATERIAL TEXTURE NUMBER 17

THICKNESS	=	0.50	CM
POROSITY	=	0.7500	VOL/VOL
FIELD CAPACITY	=	0.7470	VOL/VOL
WILTING POINT	=	0.4000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.7500	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.300000003000E-08	CM/SEC

LAYER 9

-----

TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 0

THICKNESS	=	15.00	CM
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL

INITIAL SOIL WATER CONTENT = 0.0449 VOL/VOL  
 EFFECTIVE SAT. HYD. COND. = 0.100000005000E-02 CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA  
 -----

NOTE: SCS RUNOFF CURVE NUMBER WAS USER-SPECIFIED.

SCS RUNOFF CURVE NUMBER = 0.00  
 FRACTION OF AREA ALLOWING RUNOFF = 0.0 PERCENT  
 AREA PROJECTED ON HORIZONTAL PLANE = 1.0000 HECTARES  
 EVAPORATIVE ZONE DEPTH = 20.0 CM  
 INITIAL WATER IN EVAPORATIVE ZONE = 2.991 CM  
 UPPER LIMIT OF EVAPORATIVE STORAGE = 8.340 CM  
 LOWER LIMIT OF EVAPORATIVE STORAGE = 0.360 CM  
 INITIAL SNOW WATER = 7.842 CM  
 INITIAL WATER IN LAYER MATERIALS = 193.526 CM  
 TOTAL INITIAL WATER = 201.367 CM  
 TOTAL SUBSURFACE INFLOW = 0.00 MM/YR

EVAPOTRANSPIRATION AND WEATHER DATA  
 -----

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM  
 ST-CHARLES-GARNIER QUEBEC

STATION LATITUDE = 48.33 DEGREES  
 MAXIMUM LEAF AREA INDEX = 0.00  
 START OF GROWING SEASON (JULIAN DATE) = 144  
 END OF GROWING SEASON (JULIAN DATE) = 260  
 EVAPORATIVE ZONE DEPTH = 20.0 CM  
 AVERAGE ANNUAL WIND SPEED = 13.70 KPH  
 AVERAGE 1ST QUARTER RELATIVE HUMIDITY = 70.00 %  
 AVERAGE 2ND QUARTER RELATIVE HUMIDITY = 69.00 %  
 AVERAGE 3RD QUARTER RELATIVE HUMIDITY = 76.00 %  
 AVERAGE 4TH QUARTER RELATIVE HUMIDITY = 78.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING  
 COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY PRECIPITATION (MM)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
67.5	62.0	77.5	74.0	90.5	90.5
104.5	102.3	98.5	98.5	86.0	87.0

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING  
 COEFFICIENTS FOR CARIBOU MAINE



NORMAL MEAN MONTHLY TEMPERATURE (DEGREES CELSIUS)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-14.2	-12.2	-6.0	1.1	8.7	14.5
17.5	16.1	10.5	4.4	-2.5	-10.6

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING  
 COEFFICIENTS FOR CARIBOU MAINE  
 AND STATION LATITUDE = 48.33 DEGREES

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AVERAGE MONTHLY VALUES (MM) FOR YEARS 1 THROUGH 25

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	75.14 106.67	75.05 93.01	70.32 96.04	53.24 97.61	83.53 84.77	87.05 81.64
STD. DEVIATIONS	20.77 33.67	28.64 35.94	40.00 41.30	19.52 32.38	31.27 25.76	36.26 32.08
RUNOFF						
TOTALS	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000
STD. DEVIATIONS	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000
EVAPOTRANSPIRATION						
TOTALS	8.113 74.598	7.462 67.023	12.408 53.070	10.704 30.428	56.949 11.739	67.808 7.217
STD. DEVIATIONS	1.093 19.307	1.166 22.029	2.388 11.856	4.432 5.718	16.850 4.199	23.856 0.943
LATERAL DRAINAGE COLLECTED FROM LAYER 3						
TOTALS	28.4907 102.1406	7.5606 66.3015	2.7971 40.4554	10.8712 35.7704	90.3077 36.9317	127.6093 50.6048
STD. DEVIATIONS	20.3027 16.0775	5.6169 18.4193	1.5878 18.6992	13.4461 14.7314	45.4298 16.7352	24.7928 22.2687
PERCOLATION/LEAKAGE THROUGH LAYER 4						
TOTALS	0.0002 0.0006	0.0000 0.0004	0.0000 0.0002	0.0001 0.0002	0.0005 0.0002	0.0007 0.0003

STD. DEVIATIONS	0.0001	0.0000	0.0000	0.0001	0.0003	0.0001
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

LATERAL DRAINAGE COLLECTED FROM LAYER 6

TOTALS	0.0002	0.0000	0.0000	0.0001	0.0003	0.0004
	0.0006	0.0006	0.0004	0.0003	0.0002	0.0003
STD. DEVIATIONS	0.0001	0.0000	0.0000	0.0001	0.0001	0.0001
	0.0001	0.0002	0.0003	0.0002	0.0001	0.0001

PERCOLATION/LEAKAGE THROUGH LAYER 8

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 9

TOTALS	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009
	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009
STD. DEVIATIONS	0.0001	0.0001	0.0001	0.0001	0.0002	0.0001
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (CM)

DAILY AVERAGE HEAD ON TOP OF LAYER 4

AVERAGES	4.6650	1.3610	0.4580	1.8393	14.7866	21.5907
	16.7241	10.8559	6.8448	5.8569	6.2486	8.2858
STD. DEVIATIONS	3.3243	1.0179	0.2600	2.2750	7.4385	4.1948
	2.6325	3.0159	3.1638	2.4121	2.8315	3.6462

DAILY AVERAGE HEAD ON TOP OF LAYER 7

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 25

	MM		CU. METERS	PERCENT
PRECIPITATION	1004.06	( 106.025)	10040.6	100.00

RUNOFF	0.000	( 0.0000)	0.00	0.000
EVAPOTRANSPIRATION	407.518	( 38.1384)	4075.18	40.587
LATERAL DRAINAGE COLLECTED FROM LAYER 3	599.84094	(114.74686)	5998.409	59.74131
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00351	( 0.00067)	0.035	0.00035
AVERAGE HEAD ON TOP OF LAYER 4	82.931	( 15.851)		
LATERAL DRAINAGE COLLECTED FROM LAYER 6	0.00350	( 0.00067)	0.035	0.00035
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.00001	( 0.00000)	0.000	0.00000
AVERAGE HEAD ON TOP OF LAYER 7	0.000	( 0.000)		
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.01098	( 0.00131)	0.110	0.00109
CHANGE IN WATER STORAGE	-3.310	( 2.4613)	-33.10	-0.330

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PEAK DAILY VALUES FOR YEARS	1 THROUGH 25	
	(MM)	(CU. METERS)
PRECIPITATION	63.40	634.000
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 3	8.67053	86.70532
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000051	0.00051
AVERAGE HEAD ON TOP OF LAYER 4	440.100	
MAXIMUM HEAD ON TOP OF LAYER 4	633.799	
LOCATION OF MAXIMUM HEAD IN LAYER 3 (DISTANCE FROM DRAIN)	14.4 METERS	
DRAINAGE COLLECTED FROM LAYER 6	0.00004	0.00036
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.000000	0.00000
AVERAGE HEAD ON TOP OF LAYER 7	0.000	
MAXIMUM HEAD ON TOP OF LAYER 7	0.420	
LOCATION OF MAXIMUM HEAD IN LAYER 6 (DISTANCE FROM DRAIN)	0.0 METERS	
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.000037	0.00037
SNOW WATER	468.39	4683.8555
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.4170
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.0180

\*\*\* Maximum heads are computed using McEnroe's equations. \*\*\*

Reference: Maximum Saturated Depth over Landfill Liner  
 by Bruce M. McEnroe, University of Kansas  
 ASCE Journal of Environmental Engineering  
 Vol. 119, No. 2, March 1993, pp. 262-270.

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FINAL WATER STORAGE AT END OF YEAR 25

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LAYER	(CM)	(VOL/VOL)
1	5.4469	0.2723
2	175.1998	0.2920
3	5.1329	0.0855
4	0.0000	0.0000
5	0.0135	0.0450
6	0.0050	0.0100
7	0.0000	0.0000
8	0.3750	0.7500
9	0.6462	0.0431
SNOW WATER	6.274	

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TYPE 1 - VERTICAL PERCOLATION LAYER  
MATERIAL TEXTURE NUMBER 18

THICKNESS = 900.00 CM  
POROSITY = 0.6710 VOL/VOL  
FIELD CAPACITY = 0.2920 VOL/VOL  
WILTING POINT = 0.0770 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.2981 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.100000005000E-02 CM/SEC

LAYER 3  
-----

TYPE 2 - LATERAL DRAINAGE LAYER  
MATERIAL TEXTURE NUMBER 1

THICKNESS = 60.00 CM  
POROSITY = 0.4170 VOL/VOL  
FIELD CAPACITY = 0.0450 VOL/VOL  
WILTING POINT = 0.0180 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.1696 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.999999978000E-02 CM/SEC  
SLOPE = 5.95 PERCENT  
DRAINAGE LENGTH = 52.0 METERS

LAYER 4  
-----

TYPE 4 - FLEXIBLE MEMBRANE LINER  
MATERIAL TEXTURE NUMBER 35

THICKNESS = 0.15 CM  
POROSITY = 0.0000 VOL/VOL  
FIELD CAPACITY = 0.0000 VOL/VOL  
WILTING POINT = 0.0000 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.0000 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.199999996000E-12 CM/SEC  
FML PINHOLE DENSITY = 0.00 HOLES/HECTARE  
FML INSTALLATION DEFECTS = 0.00 HOLES/HECTARE  
FML PLACEMENT QUALITY = 4 - POOR

LAYER 5  
-----

TYPE 1 - VERTICAL PERCOLATION LAYER  
MATERIAL TEXTURE NUMBER 0

THICKNESS = 0.30 CM  
POROSITY = 0.4170 VOL/VOL  
FIELD CAPACITY = 0.0450 VOL/VOL  
WILTING POINT = 0.0180 VOL/VOL  
INITIAL SOIL WATER CONTENT = 0.0450 VOL/VOL  
EFFECTIVE SAT. HYD. COND. = 0.100000005000E-02 CM/SEC

LAYER 6

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TYPE 2 - LATERAL DRAINAGE LAYER

MATERIAL TEXTURE NUMBER 20

THICKNESS	=	0.50	CM
POROSITY	=	0.8500	VOL/VOL
FIELD CAPACITY	=	0.0100	VOL/VOL
WILTING POINT	=	0.0050	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	10.0000000000	CM/SEC
SLOPE	=	5.95	PERCENT
DRAINAGE LENGTH	=	52.0	METERS

LAYER 7

-----

TYPE 4 - FLEXIBLE MEMBRANE LINER

MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.15	CM
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	0.00	HOLES/HECTARE
FML INSTALLATION DEFECTS	=	0.00	HOLES/HECTARE
FML PLACEMENT QUALITY	=	4	- POOR

LAYER 8

-----

TYPE 3 - BARRIER SOIL LINER

MATERIAL TEXTURE NUMBER 17

THICKNESS	=	0.50	CM
POROSITY	=	0.7500	VOL/VOL
FIELD CAPACITY	=	0.7470	VOL/VOL
WILTING POINT	=	0.4000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.7500	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.300000003000E-08	CM/SEC

LAYER 9

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TYPE 1 - VERTICAL PERCOLATION LAYER

MATERIAL TEXTURE NUMBER 0

THICKNESS	=	15.00	CM
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL



INITIAL SOIL WATER CONTENT = 0.0449 VOL/VOL  
 EFFECTIVE SAT. HYD. COND. = 0.100000005000E-02 CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA  
 -----

NOTE: SCS RUNOFF CURVE NUMBER WAS USER-SPECIFIED.

SCS RUNOFF CURVE NUMBER = 0.00  
 FRACTION OF AREA ALLOWING RUNOFF = 0.0 PERCENT  
 AREA PROJECTED ON HORIZONTAL PLANE = 1.0000 HECTARES  
 EVAPORATIVE ZONE DEPTH = 20.0 CM  
 INITIAL WATER IN EVAPORATIVE ZONE = 2.991 CM  
 UPPER LIMIT OF EVAPORATIVE STORAGE = 8.340 CM  
 LOWER LIMIT OF EVAPORATIVE STORAGE = 0.360 CM  
 INITIAL SNOW WATER = 7.842 CM  
 INITIAL WATER IN LAYER MATERIALS = 282.567 CM  
 TOTAL INITIAL WATER = 290.409 CM  
 TOTAL SUBSURFACE INFLOW = 0.00 MM/YR

EVAPOTRANSPIRATION AND WEATHER DATA  
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NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM  
 ST-CHARLES-GARNIER QUEBEC

STATION LATITUDE = 48.33 DEGREES  
 MAXIMUM LEAF AREA INDEX = 0.00  
 START OF GROWING SEASON (JULIAN DATE) = 144  
 END OF GROWING SEASON (JULIAN DATE) = 260  
 EVAPORATIVE ZONE DEPTH = 20.0 CM  
 AVERAGE ANNUAL WIND SPEED = 13.70 KPH  
 AVERAGE 1ST QUARTER RELATIVE HUMIDITY = 70.00 %  
 AVERAGE 2ND QUARTER RELATIVE HUMIDITY = 69.00 %  
 AVERAGE 3RD QUARTER RELATIVE HUMIDITY = 76.00 %  
 AVERAGE 4TH QUARTER RELATIVE HUMIDITY = 78.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING  
 COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY PRECIPITATION (MM)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
67.5	62.0	77.5	74.0	90.5	90.5
104.5	102.3	98.5	98.5	86.0	87.0

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING  
 COEFFICIENTS FOR CARIBOU MAINE

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES CELSIUS)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
-14.2	-12.2	-6.0	1.1	8.7	14.5
17.5	16.1	10.5	4.4	-2.5	-10.6

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING  
 COEFFICIENTS FOR CARIBOU MAINE  
 AND STATION LATITUDE = 48.33 DEGREES

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AVERAGE MONTHLY VALUES (MM) FOR YEARS 1 THROUGH 25

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	75.14 106.67	75.05 93.01	70.32 96.04	53.24 97.61	83.53 84.77	87.05 81.64
STD. DEVIATIONS	20.77 33.67	28.64 35.94	40.00 41.30	19.52 32.38	31.27 25.76	36.26 32.08
RUNOFF						
TOTALS	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000
STD. DEVIATIONS	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000
EVAPOTRANSPIRATION						
TOTALS	8.113 74.598	7.462 67.023	12.408 53.070	10.704 30.428	56.949 11.739	67.808 7.217
STD. DEVIATIONS	1.093 19.307	1.166 22.029	2.388 11.856	4.432 5.718	16.850 4.199	23.856 0.943
LATERAL DRAINAGE COLLECTED FROM LAYER 3						
TOTALS	34.5552 103.1876	9.8141 80.9054	3.4303 58.1491	7.5695 46.6249	56.5771 40.1233	107.2525 52.2122
STD. DEVIATIONS	22.3512 16.4569	7.8963 16.0246	2.2191 18.7961	9.8691 17.3170	26.8166 16.1271	23.8858 20.4266
PERCOLATION/LEAKAGE THROUGH LAYER 4						
TOTALS	0.0002 0.0006	0.0001 0.0005	0.0000 0.0003	0.0000 0.0003	0.0003 0.0002	0.0006 0.0003

STD. DEVIATIONS	0.0001	0.0000	0.0000	0.0001	0.0002	0.0001
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

LATERAL DRAINAGE COLLECTED FROM LAYER 6

TOTALS	0.0002	0.0001	0.0000	0.0000	0.0003	0.0005
	0.0005	0.0006	0.0004	0.0003	0.0002	0.0003
STD. DEVIATIONS	0.0001	0.0000	0.0000	0.0001	0.0001	0.0001
	0.0001	0.0001	0.0002	0.0002	0.0001	0.0001

PERCOLATION/LEAKAGE THROUGH LAYER 8

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 9

TOTALS	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009
	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009
STD. DEVIATIONS	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (CM)

DAILY AVERAGE HEAD ON TOP OF LAYER 4

AVERAGES	5.6579	1.7663	0.5617	1.2807	9.2637	18.1465
	16.8955	13.2471	9.8385	7.6342	6.7886	8.5490
STD. DEVIATIONS	3.6597	1.4302	0.3634	1.6698	4.3908	4.0413
	2.6946	2.6238	3.1802	2.8354	2.7286	3.3446

DAILY AVERAGE HEAD ON TOP OF LAYER 7

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 25

	MM	CU. METERS	PERCENT
PRECIPITATION	1004.06 ( 106.025)	10040.6	100.00

RUNOFF	0.000	( 0.0000)	0.00	0.000
EVAPOTRANSPIRATION	407.518	( 38.1384)	4075.18	40.587
LATERAL DRAINAGE COLLECTED FROM LAYER 3	600.40131	(111.17677)	6004.013	59.79712
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.00351	( 0.00065)	0.035	0.00035
AVERAGE HEAD ON TOP OF LAYER 4	83.025	( 15.392)		
LATERAL DRAINAGE COLLECTED FROM LAYER 6	0.00350	( 0.00065)	0.035	0.00035
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.00001	( 0.00000)	0.000	0.00000
AVERAGE HEAD ON TOP OF LAYER 7	0.000	( 0.000)		
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.01103	( 0.00136)	0.110	0.00110
CHANGE IN WATER STORAGE	-3.870	( 2.3853)	-38.70	-0.385

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PEAK DAILY VALUES FOR YEARS	1 THROUGH	25
	(MM)	(CU. METERS)
PRECIPITATION	63.40	634.000
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 3	6.68596	66.85956
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000039	0.00039
AVERAGE HEAD ON TOP OF LAYER 4	339.367	
MAXIMUM HEAD ON TOP OF LAYER 4	510.303	
LOCATION OF MAXIMUM HEAD IN LAYER 3 (DISTANCE FROM DRAIN)	12.8 METERS	
DRAINAGE COLLECTED FROM LAYER 6	0.00003	0.00033
PERCOLATION/LEAKAGE THROUGH LAYER 8	0.000000	0.00000
AVERAGE HEAD ON TOP OF LAYER 7	0.000	
MAXIMUM HEAD ON TOP OF LAYER 7	0.406	
LOCATION OF MAXIMUM HEAD IN LAYER 6 (DISTANCE FROM DRAIN)	0.0 METERS	
PERCOLATION/LEAKAGE THROUGH LAYER 9	0.000037	0.00037
SNOW WATER	468.39	4683.8555
MAXIMUM VEG. SOIL WATER (VOL/VOL)		0.4170
MINIMUM VEG. SOIL WATER (VOL/VOL)		0.0180

\*\*\* Maximum heads are computed using McEnroe's equations. \*\*\*

Reference: Maximum Saturated Depth over Landfill Liner  
by Bruce M. McEnroe, University of Kansas  
ASCE Journal of Environmental Engineering  
Vol. 119, No. 2, March 1993, pp. 262-270.

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FINAL WATER STORAGE AT END OF YEAR 25

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LAYER	(CM)	(VOL/VOL)
1	5.4469	0.2723
2	262.7998	0.2920
3	5.1740	0.0862
4	0.0000	0.0000
5	0.0135	0.0450
6	0.0050	0.0100
7	0.0000	0.0000
8	0.3750	0.7500
9	0.6461	0.0431
SNOW WATER	6.274	

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